

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-91. (canceled)

92. (previously presented) A chip package comprising:

a substrate comprising a first pad having a surface with a first region, a second region and a third region between said first and second regions, and a solder mask layer on said first and second regions, wherein a first opening in said solder mask layer is over said third region, and said third region is at a bottom of said first opening;

a silicon chip over said substrate, wherein said silicon chip comprises a second pad having a surface with a fourth region, a fifth region and a sixth region between said fourth and fifth regions and over said third region, and a passivation layer on said fourth and fifth regions, wherein a second opening in said passivation layer is under said sixth region, and said sixth region is at a top of said second opening;

a copper pillar between said third region and said sixth region, wherein said copper pillar is connected to said third region through said first opening and to said sixth region through said second opening, ~~and~~ wherein said second pad is connected to said first pad through said copper pillar;

a metal layer between said copper pillar and said sixth region, between said copper pillar and said passivation layer, between said copper pillar and said fourth region, and between said copper pillar and said fifth region, wherein said copper pillar is connected to said sixth region through said metal layer; and

a tin-containing layer between said copper pillar and said third region, wherein said copper pillar is connected to said third region through said tin-containing layer, wherein said tin-containing layer comprises silver, ~~and wherein said tin-containing layer has a first thickness less than a second thickness of said copper pillar~~ has a thickness greater than a distance between said

copper pillar and said third region.

93.-96. (canceled)

97. (previously presented) The chip package of claim 92, wherein said copper pillar is electroplated.

98. (canceled)

99. (previously presented) The chip package of claim 92, wherein said tin-containing layer further comprises copper.

100. (canceled)

101. (currently amended) The chip package of claim 92 further comprising a conductive layer between said copper pillar and said tin-containing layer, wherein said ~~second~~ thickness of said copper pillar is greater than a ~~third~~ thickness of said conductive layer.

102.-103. (canceled)

104. (previously presented) The chip package of claim 92, wherein said tin-containing layer has a melting point less than that of said copper pillar.

105. (canceled)

106. (previously presented) The chip package of claim 92, wherein said metal layer comprises titanium.

107. (previously presented) The chip package of claim 92, wherein said metal layer comprises a titanium-tungsten alloy.

108. (previously presented) The chip package of claim 92, wherein said metal layer comprises chromium.

109. (previously presented) The chip package of claim 92, wherein said metal layer comprises copper.

110.-117. (canceled)

118. (currently amended) The chip package of claim 92, wherein said tin-containing layer is ~~directly on~~ contacts said copper pillar.

119. (canceled)

120. (currently amended) A bonding structure on a chip comprising a pad having a top surface with a first region, a second region and a third region between said first and second regions, and a passivation layer on said first and second regions, wherein an opening in said passivation layer is over said third region, and said third region is at a bottom of said opening, comprising:

a metal layer on said third region, over said passivation layer and over said first and second regions, wherein said metal layer is connected to said third region through said opening;

a copper pillar on said metal layer, over said passivation layer and over said first, second and third regions, wherein said copper pillar is connected to said third region through said metal layer; and

a tin-containing cap over said copper pillar, wherein said tin-containing cap is connected to ~~said third region through~~ said copper pillar, wherein said tin-containing cap comprises silver, ~~and~~ wherein said tin-containing cap has a first thickness less than a second thickness of said copper pillar.

121. (currently amended) The bonding structure of claim 120, wherein said tin-containing cap is ~~directly on~~ contacts said copper pillar.

122. (previously presented) The bonding structure of claim 120, wherein said tin-containing cap has a greatest transverse dimension that is less than that of said copper pillar.

123. (previously presented) The bonding structure of claim 120, wherein said metal layer comprises titanium.

124. (canceled)

125. (previously presented) The bonding structure of claim 120, wherein said metal layer comprises chromium.

126. (previously presented) The bonding structure of claim 120 further comprising a conductive layer between said copper pillar and said tin-containing cap, wherein said second thickness is greater than a third thickness of said conductive layer.

127. (previously presented) The bonding structure of claim 120, wherein said metal layer comprises a titanium-tungsten alloy.

128. (previously presented) The bonding structure of claim 120, wherein said metal layer comprises copper.

129. (previously presented) The bonding structure of claim 120, wherein said tin-containing cap has a melting point less than that of said copper pillar.

130.-150. (canceled)

151. (currently amended) A bonding structure on a chip comprising a pad having a top surface with a first region, a second region and a third region between said first and second regions, and a passivation layer on said first and second regions, wherein an opening in said passivation layer is over said third region, and said third region is at a bottom of said opening, comprising:

a metal layer on said third region, over said passivation layer and over said first and second regions, wherein said metal layer is connected to said third region through said opening;

a copper pillar on said metal layer, over said passivation layer and over said first, second and third regions, wherein said copper pillar is connected to said third region through said metal layer; and

a tin-containing cap over said copper pillar, wherein said tin-containing cap is connected to ~~said third region through~~ said copper pillar, wherein said tin-containing cap has a first thickness less than a second thickness of said copper pillar, ~~and~~ wherein said tin-containing cap has a greatest transverse dimension less than that of said copper pillar.

152. (currently amended) The bonding structure of claim 151, wherein said tin-containing cap is ~~directly on~~ contacts said copper pillar.

153. (canceled)

154. (previously presented) The bonding structure of claim 151, wherein said metal layer comprises titanium.

155. (canceled)

156. (previously presented) The bonding structure of claim 151, wherein said metal layer comprises chromium.

157. (previously presented) The bonding structure of claim 151, wherein said metal layer comprises copper.

158. (previously presented) The bonding structure of claim 151, wherein said tin-containing cap comprises silver and copper.

159. (previously presented) The bonding structure of claim 151 further comprising a conductive layer between said copper pillar and said tin-containing cap, wherein said second thickness is greater than a third thickness of said conductive layer.

160. (previously presented) The bonding structure of claim 151, wherein said metal layer comprises a titanium-tungsten alloy.

161. (previously presented) The bonding structure of claim 151, wherein said tin-containing cap comprises silver.

162. (previously presented) The bonding structure of claim 151, wherein said tin-containing cap has a melting point less than that of said copper pillar.

163. (previously presented) The bonding structure of claim 120, wherein said copper pillar is electroplated.

164. (previously presented) The bonding structure of claim 151, wherein said copper pillar is electroplated.

165. (previously presented) The bonding structure of claim 120, wherein said tin-containing cap further comprises copper.